

REMARKS

Claims 1 - 20 were pending in the present application for patent as of the Office Action of September 15, 2003. In the Office Action of September 15, 2003, the Examiner rejected claims 1, 2, 3, 9, 10, 11, 13, 18, and 19 under 35 USC 102(b) as being anticipated by U.S. Patent Number 4,851,755, Fincher, rejected claims 14, 15, and 17 under 35 USC 103(a) as being unpatentable over Fincher in view of U.S. Patent Number 6,014,000, Gutierrez, and rejected claims 4, 5, 6, 7, 8, 12, 16, and 20 under 35 USC 103(a) as being unpatentable over Fincher in view of U.S. Patent Number 4,491,424, Ito et al.

Claims 1, 2, 3, 9, 10, 11, 13, 18, and 19 were rejected under 35 USC 102(b) as being anticipated by Fincher. The applicants believe that claims 1, 2, 3, 9, 10, 11, 13, 18, and 19, as originally filed, are not anticipated by Fincher. Generally, Fincher discloses a system and method for driving a stepper motor. The system of Fincher uses a pulse width modulator (PWM) 30 to provide motor drive pulses. PWM 30 is illustrated in detail in FIG. 4E, and includes generally a square wave clock signal generator 162, an integrator 163 and a voltage comparator 164. The integrator 163 receives an output from the square wave clock signal generator 162 to generate a triangular waveform in accordance with conventional PWMs as described at column 11, lines 4 - 21.

Fincher does not show or suggest an apparatus for detecting a stall condition of a stepping motor as claimed in any of the originally filed claims of the present application. For example, Fincher does not disclose an integrator as claimed in claim 1, where the integrator receives signals from a current generator used to provide drive currents to the first and second coils, and where the signals result from motion of the rotor. In Fincher, the integrator 163 (FIG. 4E) is part of the PWM 30 and only receives a signal from the square wave clock signal generator 162. The integrator of Fincher does not receive signals that result from motion of the rotor is not used as part of a circuit to detect rotor motion of a stepping motor as claimed in claim 1. In addition, Fincher does not disclose a comparator coupled to the integrator for comparing an integrated version with a predetermined threshold to detect the stall condition as claimed in claim 1. In Fincher, the comparator 164 is coupled to integrator 163 to receive the triangular waveform and provides a drive pulse to gates 171, 172, 173, and 174 of the switching logic circuit 22. Therefore, the applicants believe that claim 1, as originally filed, is allowable over Fincher.

The applicants believe that the comments above regarding the rejection of claim 1 also applies to the rejection of claims 2, 3, 9, 10, 11, 13, 18, and 19, and that claims 2, 3, 9, 10, 11, 13, 18, and 19 are allowable over Fincher.

Claims 14, 15, and 17 were rejected under 35 USC 103(a) as being unpatentable over Fincher in view of Gutierrez, and claims 4, 5, 6, 7, 8, 12, 16, and 20 were rejected under 35 USC 103(a) as being unpatentable over Fincher in view of Ito et al. The applicants believe that the comments above regarding the rejection of claim 1 also applies to the section 103 based rejection of claims 4, 5, 6, 7, 8, 12, 14, 15, 16, 17 and 20, and that claims 4, 5, 6, 7, 8, 12, 14, 15, 16, 17 and 20 are allowable over Fincher in view of Gutierrez and Ito et al.

Applicants submitted an Information Disclosure Statement and PTO form 1449 on June 19, 2003 but have not received an initialed copy back from the examiner. Applicants respectfully request that an initialed copy of the PTO form 1449 be returned with the examiner's next correspondence regarding this application.

No amendment made was related to the statutory requirements of patentability unless expressly stated herein. No amendment made was for the purpose of narrowing the scope of any claim, unless Applicant has argued herein that such amendment was made to distinguish over a particular reference or combination of references.

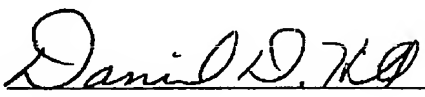
Believing to have responded to each and every rejection contained in the Office Action mailed September 15, 2003, Applicants respectfully request the reconsideration and allowance of claims 1 - 20; thereby placing the application in condition for allowance.

Respectfully submitted,

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